We claim:

1. A power management system for providing a variable power supply signal to an output power amplifier block in a wireless communication device, the power management system comprising:

(a) an average power and gain control block for providing a gain control signal and an average desired transmit power signal, the average desired transmit power signal being generated in response to at least one of a power control instruction signal and a received signal strength indicator signal;

(b) an environmental sensor unit for providing at least one environmental information signal;

(c) a power supply level adjustment generator connected to the environmental sensor unit for providing a power supply level adjustment signal in response to a data parameter indication of a baseband outgoing data stream to be transmitted by the wireless communication device and the at least one environmental information signal; and,

(d) a power supply means connected to the average power and gain control block for providing the variable power supply signal to the output power amplifier block in response to a combination of the average desired transmit power signal and the power supply level adjustment signal or a combination of the gain control signal and an altered version of the power supply level adjustment signal.

2. The power management system of claim 1, wherein the environmental sensor unit comprises at least one of:

(e) a temperature sensor for providing a temperature information signal as part of the at least one environmental information signal, the temperature information signal being related to the temperature of the hardware of the wireless communications device; and,

(f) a battery condition sensor for providing a battery condition information signal as part of the at least one environmental information signal, the battery condition information signal being related to a battery used to power the wireless communication device.

3. The power management system of claim 1, wherein the at least one environmental information signal includes a frequency information signal related to the frequency at which the baseband outgoing data stream will be transmitted.

4. The power management system of claim 1, wherein the average power and gain control block comprises an average power level block for generating the average desired transmit power signal, and a gain control block connected to the average power level block for generating the gain control signal.

5. The power management system of claim 4, wherein the power supply means includes a power supply control block for providing a power control signal and a switch converter connected to the power supply control block for providing the variable power supply signal in response to the power control signal, and wherein the power supply means is connected to the power supply level adjustment generator for providing the variable power supply signal to the output power amplifier block in response to a combination of the average desired transmit power signal and the power supply level adjustment signal.

6. The power management system of claim 1, wherein the power supply level adjustment generator produces an altered version of the power supply level adjustment signal according to the gain control signal provided by the average power and gain control block, and the power supply means comprises:

(g) a summer connected to the average power and gain control block and the power supply level adjustment generator for summing the gain control signal and the altered version of the power supply level adjustment signal to generate a first power control signal;

(h) a clipper connected to the summer for receiving the first power control signal and generating a second power control signal;

(i) a switch converter connected to the clipper for receiving the power control signal and generating the variable power supply signal; and,

(k) a reverse mapper connected to the power supply level adjustment generator and the average power and gain control block for receiving an environmental signal and an altered version of the gain control signal respectively and generating a clipper adjustment signal, the reverse mapper also being connected to the clipper for providing the clipper adjustment signal to the clipper for adjusting the performance of the clipper.

7. The power management system of claim 1, wherein the power supply means is configured to maintain the variable power supply signal above a minimum voltage level.

8. The power management system of claim 1, wherein the power supply level adjustment generator is implemented by a plurality of look-up tables, wherein one look-up table is provided for each environmental information signal and the data parameter indication, and the outputs of each look-up table are combined to generate the power supply level adjustment signal.

9. The power management system of claim 8, wherein at least one of the look-up tables is implemented by a corresponding formula.

10. The power management system of claim 1, wherein the system further comprises a data parameter detector connected to the power supply level adjustment generator and a baseband device of the wireless communications device, wherein the data parameter detector provides the data parameter indication.

11. The power management system of claim 5, wherein the power supply block is calibrated by:

(i) transmitting the wireless device radio signals at a constant power level from the wireless communication device while monitoring an Adjacent Channel Power Ratio (ACPR);

(ii) reducing the magnitude of the variable power supply signal while maintaining constant output power in the wireless device radio signals;

(iii) recording the magnitude of the variable power supply signal when the ACPR has increased to a pre-specified design target;

(iv) increasing the output power of the wireless device radio signals and repeating steps (i) to (iii) for several output power levels; and,

(v) computing an ideal transfer function for deriving the power control signal for controlling the switch converter.

12. The power management system of claim 11, wherein the power supply block is further calibrated by:

(vi) repeating steps (i) to (v) for several different wireless communication devices to obtain an average transfer function; and,

(vii) performing curve fitting on the average transfer function.

13. The power management system of claim 11, wherein the power supply level adjustment generator is calibrated by:

(viii) loading the power supply level adjustment generator with a value which causes the output power amplifier block to operate at a lowest transmission power point;

(ix) calibrating the transmission power until the output power of the output power amplifier block slightly exceeds a target power determined for a power supply voltage level;

(x) interpolating the output value of the average power level block and loading this interpolated output value, after adjustment by a reverse mapper, into the power supply level adjustment generator;

(xi) adjusting the transmission power level to a value slightly below the target power; and,

(xii) increasing the value of the transmission power level and repeating steps (viii) to (xi) until a maximum specified transmission power point is reached.

14. A method of supplying a variable power supply signal to an output power amplifier block in a wireless communications device that receives an incoming data stream from a base station radio signal and transmits an outgoing data stream in a wireless device radio signal, the method comprising:

(a) detecting at least one of a signal strength of the base station radio signal to produce a received signal strength indicator signal, and a power control instruction signal in the base station radio signal;

(b) generating an average desired transmit power signal in response to at least one of the received signal strength indicator signal and the power control instruction signal;

(c) generating at least one environmental information signal for obtaining information about the environment of the wireless communications device;

(d) generating a power supply level adjustment signal based on a data parameter indication of a baseband outgoing data stream and the at least one environmental information signal; and,

(e) combining one of the average desired transmit power signal and the power supply level adjustment signal or a gain control signal and an altered version of the power supply level adjustment signal to generate the variable power supply signal, the gain control signal being derived based on at least one of the received signal strength indicator signal and the power control instruction signal, and providing the variable power supply signal to the output power amplifier block.

15. The method of claim 14, wherein step (c) includes at least one of:

(i) generating a temperature information signal related to the temperature of the hardware of the wireless communications device and providing the temperature information signal as part of the at least one environmental information signal;

(ii) generating a battery condition information signal related to a battery used to power the wireless communications device and providing the battery condition information signal as part of the at least one environmental information signal; and,

(iii) generating a frequency information signal related to the frequency at which the outgoing data stream is transmitted and providing the frequency information signal as part of the at least one environmental information signal.

16. The method of claim 14, wherein step (e) includes:

(iv) combining the average desired transmit power signal and the power supply level adjustment signal to generate a power control signal; and,

(v) converting the power control signal into the variable power supply signal.

17. The method of claim 14, wherein step (e) includes:

(iv) adding an altered version of the power supply level adjustment signal and the gain control signal to provide a first power control signal, the altered version of the power supply level adjustment signal being generated based on the derivation of the gain control signal;

(v) clipping the first power control signal to provide a second power control signal; and,

(vi) converting the second power control signal into the variable power supply signal.

18. The method of claim 17, wherein step (v) includes providing a clipper adjustment signal to adjust clipping parameters, the clipper adjustment signal being

generated in response to a combination of an environmental signal and an altered version of the gain control signal.

19. The method of claim 14, wherein the method further comprises maintaining the variable power supply signal above a minimum voltage level.